Borehole # 21-27-09

Log Event A

Borehole Information

Farm : BX	**Tank :** BX-102	**Site Number :** 299-E33-133
N-Coord : 45,490	**W-Coord :** 53,160	**TOC Elevation :** 654.53
Water Level, ft :	**Date Drilled :** 5/31/1970	

Casing Record

Type : Steel-welded	Thickness, in. : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 150	

Borehole Notes:

According to the driller's log, this borehole was drilled in May 1970 to a depth of 150 ft using 6-in. casing. The drilling report does not indicate the borehole casing was perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately 0.5 ft below the ground surface.

Equipment Information

Logging System : 1B	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 02/1997	**Calibration Reference :** GJO-HAN-13	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number :	1	**Log Run Date :**	07/01/1997	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	0.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	40.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	2	**Log Run Date :**	07/01/1997	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	39.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	53.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	3	**Log Run Date :**	07/02/1997	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	149.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	61.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Borehole # 21-27-09

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Log Run Number :	4	**Log Run Date :**	07/03/1997	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	62.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	52.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	5	**Log Run Date :**	07/03/1997	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	125.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	110.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Analysis Information

Analyst : S.D. Barry

Data Processing Reference : MAC-VZCP 1.7.9 Analysis Date : 07/08/1997

Analysis Notes :

This borehole was logged by the SGLS in five log runs, including one relog section performed for quality assurance purposes. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclides Cs-137, Sb-125, and processed uranium were detected around this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to the bottom of the logging interval (149 ft). Sb-125 contamination was detected from 75 to 89.5 ft. Processed uranium was measured from 74 to 81 ft, 94 to 99.5 ft, and 103.5 to 132 ft.

The K-40 concentration values increase at about 35 ft.

The interval from 110 to 125 ft was relogged for quality assurance purposes. The concentration values of both log runs for U-235, Cs-137, and the natural radionuclides were plotted. The calculated concentration values were well within the statistical error range and show the excellent repeatability of the system.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BX-102.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest

Borehole 21-27-09

Log Event A

A combination plot includes the man-made, natural radionuclides and the total gamma derived from the spectral data.

A rerun plot was generated for the region between 110 and 125 ft. The radionuclide concentrations shown were calculated using the separate data sets provided by the original and rerun logging runs.